

WHAT IS CLAIMED IS:

1 1. In a wireless mesh network having a first node, at least
2 a second node and a network management station, the first and at
3 least second nodes and the network management station intercoupled
4 theretogether to permit communications therebetween, an improvement
5 of apparatus for dynamically selecting frequency levels at which to
6 define communication channels upon which to effectuate
7 communications during operation of the wireless mesh network, said
8 apparatus comprising:

9 a frequency level quality indicia measurer positioned at
10 each of the first and at least second nodes, said frequency level
11 quality-indicia measurer for measuring communication quality
12 indicia at a selected plurality of different global frequency
13 levels at the node at which each of said frequency level quality-
14 indicia measurers is positioned and for generating a report
15 representative of values of the communication quality indicia
16 measured thereat;

17 a global channel selection positioned at the network
18 management station and coupled to receive reports generated by each
19 of said frequency level quality-indicia measurers, said global
20 channel selector for selecting a first global frequency level at
21 which to define a first global communication channel upon which to
22 communicate first global communication signals with, and between,
23 all of the first and at least second nodes.

1 2. The apparatus of claim 1 wherein the communication
2 quality indicia measurer measures noise levels at each of the
3 selected plurality of different global frequency levels and wherein
4 the reports generated thereat contain listings of values of the
5 noise levels measured at the different global frequency levels.

1 3. The apparatus of claim 2 wherein selection by said
2 channel selector of the first frequency level at which to define
3 the first communication channel is made responsive to the listings
4 of the values of the noise levels measured at the different global
5 frequency levels at the first and at least second nodes.

1 4. The apparatus of claim 3 wherein the frequency level
2 selected by said global channel selector from amongst the plurality
3 of different global frequency levels to form the first frequency
4 level comprises the frequency level which exhibits minimal noise
5 levels according to a selected criteria.

1 5. The apparatus of claim 4 wherein the selected criteria
2 according to which said global channel selector determines the
3 first frequency level to exhibit the minimal noise levels comprises
4 lowest average noise levels.

1 6. The apparatus of claim 4 wherein the selected criteria
2 according to which said global channel selector determines the
3 first frequency level to exhibit the minimal noise levels comprises
4 lowest maximum noise level.

1 7. The apparatus of claim 1 wherein the first communication
2 channel defined at the first frequency level selected by said
3 channel selector comprises a control channel upon which to
4 communicate control signals with the first and at least second
5 nodes.

1 8. The apparatus of claim 1 wherein data communications are
2 selectably effectuable by the first and at least second nodes, and
3 wherein measurements made by said frequency level quality indicia
4 measurers are made during time periods absent of data communication
5 by the first and at least second nodes.

1 9. The apparatus of claim 8 wherein the wireless mesh
2 network is operable pursuant to a protocol scheme which defines
3 control slots forming time slots during which only control signals
4 are generated, and wherein the measurements made by said frequency
5 level quality indicia measurer at each of the first and at least
6 second nodes are made during the control slots.

1 10. The apparatus of claim 1 wherein said frequency level
2 quality indicia measurer further remeasures the communication
3 quality indicia at selected intervals.

1 11. The apparatus of claim 10 wherein said global channel
2 selector further selects the first frequency level at which to
3 define the first communication channel responsive to remeasurements
4 made by said frequency level quality indicia measurer.

1 12. The apparatus of claim 1 wherein measurements made by
2 said frequency level quality indicia measurer are made
3 automatically at selected intervals.

1 13. The apparatus of claim 1 wherein measurements made by
2 said frequency level quality indicia measurer are made responsive
3 to requests therefor.

1 14. The apparatus of claim 13 wherein the requests for
2 measurements, responsive to which said frequency level quality
3 indicia measurer makes measurements, are generated at the network
4 management station.

1 15. The apparatus of claim 1 wherein said frequency level
2 quality indicia measurer positioned at each of the first and at
3 least second nodes further selectably measure communication quality
4 indicia at a selected plurality of different local frequency
5 levels.

16. The apparatus of claim 15 further comprising a first local channel selector positioned at the first node and coupled to receive indications of measurements made by said frequency level quality indicia measurer positioned at the first node of the communication quality indicia at the selected plurality of different local frequency levels, said first local channel selector for selecting at least a first local frequency level at which to define at least a first local communication channel upon which to communicate first local communication signals within the first node.

17. The apparatus of claim 16 wherein said frequency level quality indicia measurer further generates a report representative of values of communication quality indicia of the selected plurality of different local frequency levels and wherein selection made by said first local channel selector is made responsive to values of the report representative of the values of the communication quality indicia of the selected plurality of different local frequency levels.

1 18. The apparatus of claim 15 further comprising a second
2 local channel selector positioned at the second node and coupled to
3 receive indications of measurements made by said frequency level
4 quality indicia measurer positioned at the first node of the
5 communication quality indicia at the selected plurality of
6 different local frequency levels, said second local channel
7 selector for selecting at least a second local frequency level at
8 which to define at least a second local communication channel upon
9 which to communicate second local communication signals within the
10 second node.

1 19. The apparatus of claim 15 wherein at least portions of
2 frequency ranges within which the different global frequency levels
3 are located and of frequency ranges within which the different
4 local frequency levels are located overlap.

20. In a method for communicating in a wireless mesh network having a first node, at least a second node, and a network management station, the first and at least the second nodes and the network management station intercoupled theretogether to permit communications therebetween, an improvement of a method for dynamically selecting frequency levels at which to define communication channels upon which to effectuate communication during operation of the wireless mesh network, said method comprising.

measuring communication quality indicia at a selected plurality of different global frequency levels at each of the first and at least second nodes;

generating reports representative of values of the communication quality indicia measured during said operation of measuring; and

selecting a global frequency level at which to define a first global communication channel upon which to communicate first global communication signals with, and between, all of the first and at least second nodes.

21. The method of claim 20 further comprising the operation of measuring at the first node communication quality indicia at a selected plurality of different local frequency levels.

1 22. The method of claim 21 further comprising the operation
2 of selecting at least a first local frequency level at which to
3 define at least a first local communication channel upon which to
4 communicate first local communication signals within the first
5 node.